Anthrenus (Florilinus) loebli n. sp. (Coleoptera, Dermestidae, Anthrenini) from the Middle East

M. Kadej & J. Háva

Abstract
Anthrenus (Florilinus) loebli n. sp. (Coleoptera, Dermestidae, Anthrenini) from the Middle East.— A new species Anthrenus (Florilinus) loebli from Israel, Lebanon and Jordania is described, illustrated and compared with the similar species classified within the subgenus Florilinus Mulsant & Rey, 1868. The new species is characterized by oval eyes, eight–segmented antenna and subtriangular, occasionally triangular, scales on the dorsum. The yellowish/light brown scales are present on the anterior and terminal part of the elytra and create three irregular, transverse bands. Antennal segment eight are at least 4.8 to 5x longer than segment 7 in male, 2.1x longer in female. The new species is most similar to A. (F.) museorum (Linnaeus, 1761); A. (H.) fuscus Olivier, 1789 and A. (F.) flavidus Solsky, 1876. An identification key to externally similar species of the genus is given. The most distinctive taxonomic characteristics concern the male genitalia and antenna (in ratio of length of segments of antennal club) and are also described.

Key words: Taxonomy, New species, Coleoptera, Dermestidae, Anthrenus, Israel, Lebanon, Jordania.

Resumen
Anthrenus (Florilinus) loebli sp. n. (Coleoptera, Dermestidae, Anthrenini) de Oriente Medio.— Se describe una nueva especie, Anthrenus (Florilinus) loebli, de Israel, el Líbano y Jordania. Se la describe, ilustra y compara con las especies similares clasificadas en el subgénero Florilinus Mulsant & Rey, 1868. La nueva especie se caracteriza por tener los ojos ovalados, antenas de ocho segmentos y escamas subtriangulares, ocasionalmente triangulares, en el dorso. Dichas escamas, marrón claro/amarillentas, se hallan en la parte anterior y terminal de los élitros, formando tres bandas transversales irregulares. El octavo segmento de la antena es al menos de 4,8 a 5 veces más largo que el séptimo en el macho, y 2,1 veces más largo en la hembra. Esta nueva especie es muy parecida a A. (F.) museorum (Linnaeus, 1761); A. (H.) fuscus Olivier, 1789 y A. (F.) flavidus Solsky, 1876. Se da una clave de identificación para especies del mismo género que se parecen externamente. Las características taxonómicas distintivas de la especie conciernen a los genitales masculinos y a las antenas (en la proporción de la longitud de la maza de la antena) y se describen detalladamente.

Palabras clave: Taxonomía, Especie nueva, Coleoptera, Dermestidae, Anthrenus, Israel, Líbano, Jordania.

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Introduction

*Anthrenus* carpet beetles are small and round. Their body is covered with colourful scales of various brown, tan, red, whitish and grey hues. The scales create different patterns (spots, transversal bands), especially on the pronotum and elytra. These patterns are usually specific to a particular species, making them very useful in the identification process.

The genus *Anthrenus* was initially divided into 8 subgenera (Mroczkowski, 1968; Zvantieva (1976); however, reduced this genus to only 2 subgenera but his postulate was ignored by other taxonomists who still recognized 8 subgenera (Beal, 1998; Burakowski et al., 1986). The ninth subgenus, *Peacockia*, was described in 1993 (Menier & Villelament, 1993), followed by another one – *Setapeacockia*, recognized by Háva (2008). The issue of *Anthrenus* classification remains unresolved, and both classifications prevail in the available publications. The classification by Zvantieva (2009) includes only two subgenera: *Anthrenus* s. str. and *Florilinus*, whereas the other classification adds to the nine subgenera: *Anthrenodes*, *Anthrenops*, *Anthrenus* s. str., *Florilinus*, *Helocerus*, *Nathrenus*, *Peacockia*, *Rantherenus*, *Solskinus* (Háva, 2003), the tenth subgenus – *Setapeacockia*.

Subgenus *Florilinus* has 30 species and all of them are characterized by 8–segmented antennae with 2–segmented antennal club. Only two species within the subgenus *Florilinus* have been found in Israel—the cosmopolitan *Anthrenus museorum* (Linnaeus, 1761) and A. sordidulus Reitter, 1889 (Háva, 2010). This article follows up on the previous articles describing Dermentidae found in Israel (Háva, 2007; Háva et al., 2001, 2007).

Material and methods

The size of beetles or their body parts can be useful in species recognition and thus, the following measurements were made: total length (TL, linear distance from anterior margin of pronotum to apex of elytra); pronotal length (PL, maximum length measured from anterior margin to posterior margin); pronotal width (PW, maximum linear transverse distance); elytral length (EL, linear distance from shoulder to apex of elytron); elytral width (EW, maximum linear transverse distance); antennal segment 8 at least 4.8 to 5x longer than segments 1–6 light–brown, antennal club brown. Only two species within the subgenus *Florilinus* have 30 species and all of them are characterized by 8–segmented antennae with 2–segmented antennal club.

Body measurements (mm): TL 2.07–2.15 PL 0.45–0.57 PW 0.95–1.00 EL 1.62–1.70 EW 1.29–1.35.

Description

Body convex, slightly elongate, covered by subtriangular, occasionally triangular, scales, mostly with 7–8, occasionally 5 more or less linear ribs; the apex of the scale body is truncate or concave and an apical lappet is present (fig. 6). Head distinctly convex and oval eyes. Frons with median ocellus, covered with grey scales. Antenna 8–segmented, with 2–segmented antennal club (fig. 3); antennal segments 1–6 light–brown, antennal club brown. Antennal segment 8 at least 4.8 to 5x longer than segment 7 in male, 2.1x longer in female. Antenna occupies whole cavity of antennal fossa. Antennal club occupies less than half of the antenna length in male and female. Antennal fossa completely open along lateral margin of the pronotum. Dorsal and ventral surface of integument brown, slightly punctated, covered with scales (figs. 1, 2). Pronotum covered with mixed grey, yellowish/light brown (lateral margins, on the angles and central bottom apex) and dark brown scales (in the central part) scales. Elytra covered with mixed yellowish/light brown and
dark brown scales. The yellowish/light brown scales are present on the anterior and terminal part of the elytra and create three irregular, transverse bands. The areas between bands are covered with dark brown scales mixed with single yellowish scales. Ventral surface grey except for visible sternites I–V covered with mixed grey and light brown scales; first abdominal sternite without stria. Legs brown, covered with grey scales on dorsal surface. Tarsus with two tarsal claws slightly curved. Male genitalia as in figure 4. Parameres U–shaped, covered with numerous short setae. Median lobe C–shaped, wide posteriorly, distal end of aedeagus strongly reflexed ventrally (figs. 3, 5). Pygidium lacking dark, subbasal, transverse, carina–like line; setae limited to apical area, occasional and rather randomly placed.

Variability
Occasionally, the dorsum of some specimens might be covered with grey scales only; in such cases, the dorsal patterns are absent.

Differential diagnosis
The new species’ dorsal appearance resembles A. (F.) museorum (Linnaeus, 1761); A. (H.) fuscus Olivier, 1789 and A. (F.) flavidus Solsky, 1876. It can be easily identified from externally similar species and from A.
Identification key for species of genus Anthrenus (Florilinus) externally similar.

Clave de identificación para especies del género Anthrenus (Florilinus) parecidas externamente.

| 1 | Antenna 5–segmented, antennal club 1–segmented | A. (H.) fuscus Olivier, 1789 |
| 2 | Antenna 8–segmented, antennal club 2–segmented |  |
| 2 | Elytra and pronotum covered only by unicolor yellow, sometimes grey scales | A. (F.) sordidulus Reitter, 1889 |
| 3 | Elytra and pronotum covered by tricolor scales |  |
| 3 | Disc of pronotum usually with distinct median pronotal line of pale scales; abdominal sternum 1–5 bicolor; covered with patch of dark scales at lateral margins of abdominal sternum 2–5 and in the middle of sterna 5 | A. (F.) museorum (Linnaeus, 1761) |
| 3 | Disc of pronotum without distinct median pronotal line of pale scales; abdominal sternum 1–5 unicolor; sometimes covered with mixed grey and light brown scales |  |
| 4 | Disc of pronotum consist of all dark brown scales in the central part | A. (F.) loebli sp. n. |
| 4 | Disc of pronotum covered with light brown/grey/yellowish scales in the central part | A. (F.) flavidus Soulsky, 1876 |

sordidulus (also recorded from Israel) by characters mentioned in the identification key.

Some other important differences can be also found in the morphology of the male genitalia and antennae, especially in ratio of length of segments of antennal club.

Morphology of male genitalia
Aedeagus (median lobe) (in lateral view): S–like shape, slightly reflexed ventral F–like shape (A. museorum); C–like shape, slightly reflexed ventral (A. flavidus and A. loebli).

Apex of aedeagus (lateral view): rounded (A. museorum/A. sordidulus); acute (A. flavidus and A. loebli), but bridge between paramers is relatively wide in A. flavidus but thin in A. loebli. All the species of apex of aedeagus are conical in shape (in frontal view), except A. museorum which is bubble–shaped.

Morphology of antennae
Male antennal segment 8 at least 5x longer than segment 7, in female 2.2x longer (A. museorum), 7–8x longer in male, 1.7–2x in female (A. flavidus), 2x longer in male and female (A. sordidulus). 4.8 to 5x longer in male, 2.1x longer in female (A. loebli).

Discussion
Many of Florilinus's species look similar externally thanks to the particular dorsal patterns. Main differences helpful in identification are found in morphology of male genitalia and form of antennae. For this reason the examination of the male genitalia and ratio of segment lengths of antennal club are crucial to confirm identification.

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